

Blanco Mariout Barley

may replace other varieties in some growing areas

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A part of the three-quarters of a million California acres long sown to California Mariout barley will begin to give way to the new Blanco Mariout after the 1961 harvest.

A typical product of the backcross system of plant breeding—some economic gains without any upset of genetic factors governing varietal adaptation—the new Blanco Mariout is adapted for use in the districts where California Mariout is now grown. These are the warmer, drier, and more alkaline-soil parts of the state. Varieties Blanco Mariout will tend to replace include California Mariout and Arivat.

Blanco Mariout was produced from multiple backcrossing of male sterile Club Mariout × California Mariout⁷ at Davis, in a program that began in 1943. Testing began in 1956, but Breeder's seed was not produced until 1959. Then 192 somewhat diverse lines were bulked to give 105 pounds of Breeder's seed. The principal 1960 Foundation Seed increases were made at the Imperial Valley Field Station and from a summer sown crop at Davis. From these increases 11

grower members of the California Crop Improvement Association received allocations totaling about 12,500 pounds of Registered seed for planting in 1960-61.

Blanco, a Spanish word for white or colorless, describes the seed color change from the blue California Mariout prototype. It was the sought change, involving principally the aleurone cells of the endosperm. In the field before harvest, Blanco Mariout will show a darker green leaf and somewhat denser spikes. The threshed grain is strikingly brighter, with more variable rachilla hairiness and lengths of rachillas than California Mariout. The grains also average larger in size and softer in texture and show less skinning and cracking from threshing than California Mariout. The reduced threshing damage is due to improved hull or glume adherence to the seed. This feature re-

duces test weight slightly. Blanco Mariout will show essentially the same early maturity, height, disease reaction, and drought and alkali tolerance as California Mariout.

No really significant yield differences, reported in pounds per acre, were established in statewide tests.

Blanco Mariout has better and broader marketing prospects, compared with blue California Mariout, because white—colorless aleurone—barleys have generally brought growers a slight premium in most years since 1945. There is a distinct market preference for barleys with a colorless aleurone for export for food use, particularly in Japan and Korea; for domestic use for pearling, dietary flour, or malt products; and for malting and brewing. Use of some Blanco Mariout in brewing ultimately is possible,

Yields in Pounds per Acre of California Mariout and Blanco Mariout Barley, in Statewide Tests

| Test area | No. of years | Calif. Mariout | Blanco Mariout |
|--------------------------------------|--------------|----------------|----------------|
| University Farm, Davis | 5 | 3304 | 3375 |
| Meloland Field Station | 4 | 3167 | 3241 |
| Extension sponsored farm tests | 3 | 2833 | 2712 |

prevalent in the normal × normal progenies of the Nonpareil-Peerless experiments.

Probably Jordanolo should not be propagated in nurseries or in topworking other trees. However, many Jordanolo orchards are still normal and may remain so for a number of years.

The studies on noninfectious bud-failure indicate a genetic disorder in which control depends upon proper selection for propagation. The method of selection depends upon the particular variety.

One group of varieties includes Nonpareil, Peerless, and probably Mission (Texas), in which bud-failure is evidently acquired by mutation. To propagate trees in this group, budwood sources should be free of bud-failure, although it is difficult to prove the source to be free of the disorder. Scionwood should

come from trees examined carefully for freedom from the disorder, but an individual tree may show slight or no symptoms for many years. However, in most cases, symptoms do develop by the time the tree reaches an age of five or six years. Collection of budwood from very old trees is less hazardous, but such trees may carry virus diseases that render them undesirable budwood sources.

Tracing scionwood sources known to be free of bud-failure through nursery records to their behavior in individual orchards would require a system of record keeping and time to put into effect but could be of considerable significance in protecting the almond industry of California.

A second group of almond varieties subject to noninfectious bud-failure includes Jordanolo and probably Jubilee

which, in the Paso Robles area, has a history similar to that of Jordanolo. These varieties apparently acquired the disorder through the seed, but its potential severity was not immediately revealed.

The basic problem in testing varieties is to identify potential bud-failure before the clone is introduced into commercial plantings.

Long-range experimental work is being started to learn whether controlled crosses between trees can be used to test budwood sources and whether the incidence of bud-failure among the offspring could be used in estimating the bud-failure potential of the source.

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based on continuing pilot tests in government and industry laboratories. Blanco Mariout seems to have more and better enzymes and proteins and gives a higher extract yield than Atlas. It tends to germinate faster than most of our other barleys. As a rice-like food substitute, it has a striking advantage over California Mariout in color, texture, and appearance. Being larger and softer, Blanco Mariout grains should roll better than California Mariout. Rolled barley is often preferred over ground barley for livestock feed use.

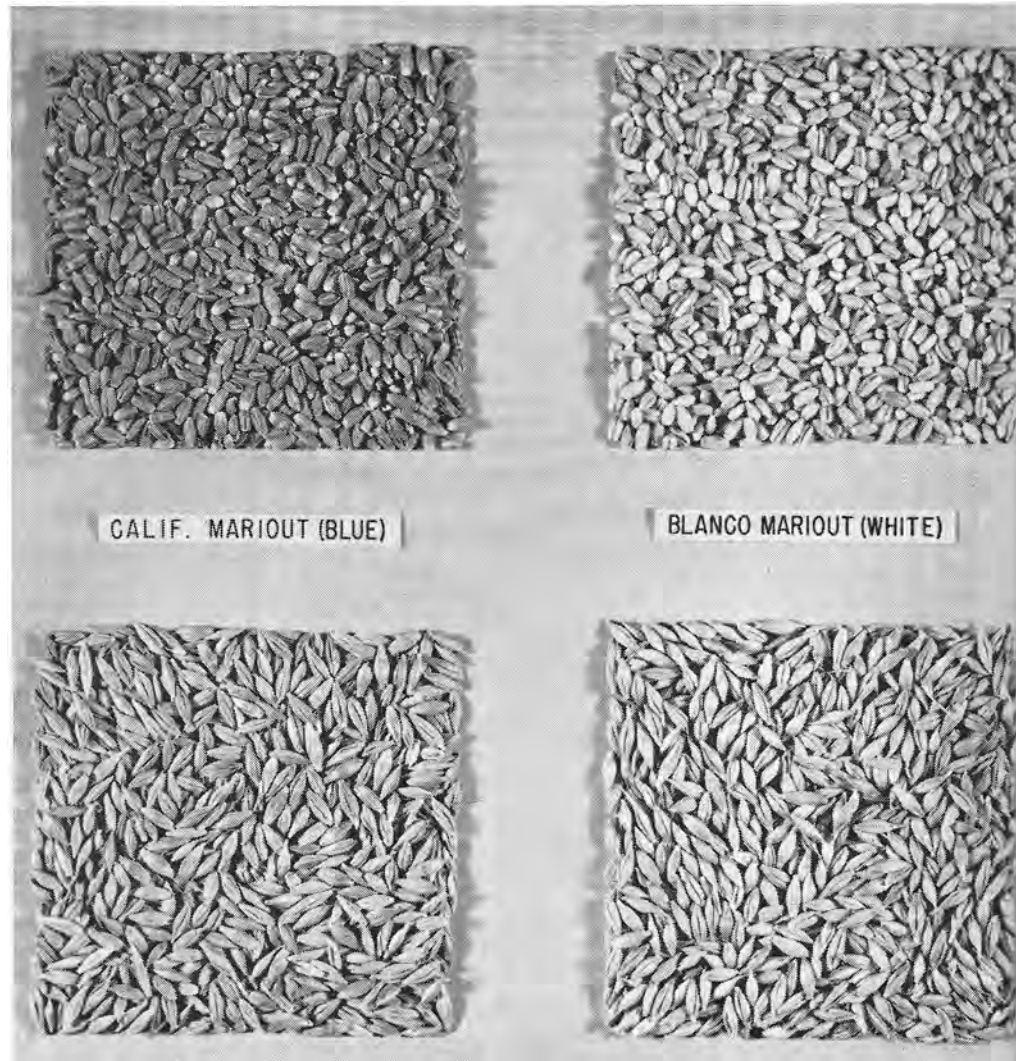
Blanco Mariout can reproduce from planting at any time of the year, but the highest production will generally come from December sowing. Like California Mariout, Blanco is especially well adapted for late spring planting as compared to other varieties. The special hazards from very early fall sowing are foliar diseases such as scald and mildew, yellow-dwarf virus, spring frost at heading, or excessive lodging.

Most of the 1961 crop of Blanco Mariout meeting certification standards will likely be replanted for the production of certified seed. Large quantities of certified seed for regular commercial planting will not be available until the summer of 1962.

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Samples of California Mariout barley, left, compared to the new variety Blanco Mariout

Respiratory diseases

IN CHICKENS

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Infectious coryza, a respiratory disease of chickens, is caused by the bacterium *Haemophilus gallinarum*. The disease has continuously plagued sections of the poultry industry in California for a number of years. Since prevention and control measures have met with relatively little success, new approaches have been made to the study of the disease. *Haemophilus* organisms associated with recent field cases of coryza and airsac disease have been isolated and characterized for their cultural aspects, biochemical activities, specific antibodies formed against them, and their virulence in causing disease in chickens, chicken embryos, and mice. Similar studies have been made on other microorganisms found associated

with *H. gallinarum* in diseased tissues, especially members of the genus *Pasteurella*. Whether the severe disease observed in field cases was caused by *H. gallinarum* alone or by a combination of agents is under investigation.

Combined field and laboratory investigations have produced the following results: 1—Unusually virulent strains of *H. gallinarum* have been isolated recently from coryza-affected chickens. Studies show that these strains differ in cultural, biochemical, and pathogenicity characteristics from previously described strains of the bacterium. 2—A detailed study of the gross and microscopic lesions caused by eight isolates of *H. gallinarum* shows that these organisms produce lower respiratory tract disease—airsacculitis—as well as tracheitis and coryza. 3—Significant differences in susceptibility to *Haemophilus*-caused airsacculitis were found among identical

groups of chickens separated only according to where they were raised—whether on a chicken ranch in northern California or in isolation at the School of Veterinary Medicine in Davis. Although both groups of birds were similar as to source, breed, age, diet, and management, the ranch-raised birds were demonstrated to be more susceptible to airsacculitis than the birds kept in isolation. Further investigation is in progress to determine the reason for these differences in susceptibility. 4—Methods for immunization of chickens against *Haemophilus*-caused disease are now being tested. Results obtained thus far indicate that single-shot immunization with a potent formalin-killed *Haemophilus* vaccine will protect chickens for limited periods of time against airsacculitis caused by *H. gallinarum*.

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